

Fig. 1. Upregulated genes after serum withdrawal

Common PC-12/serum	Genbank	Description
Up regulated genes:		
Cp	L33869; J05424	Ceruloplasmin (ferroxidase)
Adcy6	L01115	Adenylyl cyclase 6
Igf1r	L29232	Insulin-like growth factor 1 receptor
Vegf	M32167	vascular endothelial growth factor
	X15546	Rat mRNA for sucrase isomaltase (EC 3.2.1.10).
		Serotonin (5-hydroxytryptamine (5HT))
Htr1b	M89954	receptor, type 1B
Fosl2	U18913	Fos like antigen 2
Plcd1; Plc1	M20637	phospholipase C-III; Rat phospholipase C-III mRNA, complete cds.
Il18	U77776	interleukin 18
		calcium channel, voltage-dependent, alpha2/delta
Cacna2d1	M86621	subunit 1
		Vesicle-associated membrane protein
Vamp2	M24104; J04827	(synaptobrevin 2) putative; Rattus norvegicus G protein-coupled receptor (GPR19) gene, partial cds.
GPR19	U65417	This sequence comes from Fig. 1b; A2 adenosine receptor [rats, striatum, mRNA, 2141 nt].
A2 adenosine	S47609	
Mxi1	AF003008	Max interacting protein 1
		ATPase isoform 2, Na+K+ transporting, beta
Atp2b2	J03754	polypeptide 2
		Secretory granule
		neuroendocrine, protein 1
Sgne1	M63901	(7B2 protein)
Pim1	X63675	Pim-1 oncogene
Ak3	D13062	adenylate kinase 3
		alpha-methylacyl-CoA
Amacr	Y08172	racemase
		Inhibitor of DNA binding 2, dominant negative helix-loop-
Id2	D10863	helix protein
		Rattus norvegicus mRNA for 20-alpha-hydroxysteroid dehydrogenase (20-alpha-HSD), complete cds
LOC171516	L32601	

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Tlp1	U89282	telomerase protein component 1
Pdk1	L22294	pyruvate dehydrogenase kinase, isoenzyme 1
		Solute carrier family 4, member 2, anion exchange protein 2
Slc4a2	J05166	
Pla2g2c	U07798	phospholipase A2, group IIC
Stx3a	L20820	syntaxin 3
interleukin 4	X69903	Rattus norvegicus mRNA for interleukin-4 receptor (soluble form), complete cds
		Protein tyrosine phosphatase, non-receptor type substrate 1 (SHP substrate 1)
Ptpns1	D85183	B-cell translocation gene 2,
Btg2	M60921	anti-proliferative Acyl-Coa dehydrogenase,
Acadv1	D30647	Very long chain
Clu	M64723	Clusterin
Stx4a	L20821	syntaxin 4
Npr1	M74535	Natriuretic peptide receptor A/Guanylate cyclase A
Matk	L34542	megakaryocyte-associated
Psen2	AB004454	tyrosine kinase presenilin-2
Pla2g6	U51898	phospholipase A2, group VI pancreatic lipase-related protein 2
Pnliprp2	L09216	
Plcb3	M99567	phospholipase C, beta 3
Plcg1	J03806	Phospholipase C, gamma 1
Efnb1	U07560	Ephrin B1
Rb2	D55627	Retinoblastoma-related gene
		protein kinase C epsilon subspecies; Rat protein kinase C epsilon subspecies.
Prkce; Pkce	M18331	Spinocerebellar ataxia type 1
Sca1	X91619	
Pla2g5	U03763	phospholipase A2, group V Angiotensin I-converting enzyme (Dipeptidyl carboxypeptidase 1)
Ace	U03734	Steroid sulfatase
Sts	U37138	protein kinase C zeta subspecies; Rat protein kinase C zeta subspecies.
Prkcz; Pkcz	M18332	

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Cacna1a	M64373	Calcium channel alpha 1A carcinoembryonic antigen-related cell adhesion
Ceacam1	M92848	molecule
Amph1	Y13381	amphiphysin
		Rat glutathione S-transferase mRNA,
Mgst1	J03752	complete cds
Ctsl	Y00697	Cathepsin L
		Acyl Coenzyme A
Acadl	J05029	dehydrogenase, long chain ATP-binding cassette, subfamily B (MDR/TAP), member 1 (P-glycoprotein/multidrug
Abcb1	M81855	resistance 1)
	X06769	c-fos protein (AA 1-380); Rat c-fos mRNA.
		glutamate receptor, ionotropic, AMPA2 (alpha 2)
Gria2	M85035	
Stx6	U56815	syntaxin 6
Dpp6	M76426	dipeptidylpeptidase 6
		G protein-coupled receptor
		kinase 2, groucho gene
Gprk2l	X97568	related (Drosophila)
Max	D14447	Max
		protein kinase C alpha (AA 1-672); Rat mRNA for protein
Prkca; Pkca	X07286	kinase C alpha.
Faah	U72497	fatty acid amide hydrolase
		Carnitine
		palmityltransferase 1 alpha,
Cpt1a	L07736	liver isoform
		calcium channel, voltage-dependent, L type, alpha 1D
Cacna1d	M92905	subunit
		BRbeta B-regulatory subunit
LOC60660	D38260	of protein phosphatase 2A
Scg2	M93669	Secretogranin II
		transmembrane receptor
Unc5h2	U87306	Unc5H2
		potassium inwardly-rectifying
		channel, subfamily J,
Kcnj12	X78461	member 12
Chrb1	X74833	Acetylcholine receptor beta
		B-cell translocation gene 1,
Btg1	L26268	anti-proliferative
		Lectin, galactose binding,
Lgals9	U67958	soluble 9 (Galectin-9)
Insr	M29014	Insulin receptor

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Syt5	U26402	synaptotagmin 5 Rattus norvegicus calcium/calmodulin-dependent protein kinase II delta subunit mRNA, partial cds.
Camk2d; CA Hmg1	L13408 M64986	High mobility group 1 thyroid hormone receptor
Thra1	X12744	alpha Rattus norvegicus cytochrome P450 4F5 (CYP4F5) mRNA, complete cds
CYP4F5	U39207	Insulin-like growth factor 2 receptor
Igf2r	U59809	Rat glucagon receptor mRNA, complete cds
Gcgr Arrb1	L04796 M91589	Arrestin, beta 1 protease (prosome, macropain) 26S subunit,
Psmc1	D50696	ATPase 1 R.rattus mRNA for NPY-1
Npy1r; NPY-	Z11504  AB005541	receptor.  kinase domain is 450..1295; Rattus rattus mRNA for PCTAIRE3, complete cds.

Fig. 2. Down-regulated genes after serum withdrawal.

Down regulated genes:

Chrna5	J05231	Acetylcholine receptor alpha 5
Ngfr	X05137	Nerve growth factor receptor, fast
RBP-6	M69055	Rat insulin-like growth factor binding protein (rIGFBP-6) mRNA, complete cds.
Tgfbr1	L26110	transforming growth factor, beta receptor I
Slc6a6	M96601	taurine/beta-alanine transporter
Psmb3	D21800	Rat mRNA for proteasome subunit RC10-II, complete cds.
		C <sub>holinergic receptor, nicotinic, alpha polypeptide 7 (neuronal nicotinic acetylcholine receptor alpha 7)</sub>
Chrna7	L31619; M85273	(bungarotoxin alpha)
		6-phosphofructo-2-kinase/fructose-2,6-
Pfkfb4	M64797	biphosphatase 4
		heterogeneous nuclear
		ribonucleoproteins methyltransferase-
Hrmt1l2	U60882	like 2 (S. cerevisiae)
Gpx5; GP)	X62404; S41829	R.rattus mRNA for epididymal secretory glutathione peroxidase.
Mmp14	X83537	matrix metalloproteinase 14, membrane-inserted
Creb1	X14788	cAMP response element binding protein
Slc2a3	U17978	Solute carrier family 2 A3 (neuron glucose transporter)
Atp1a1	M28647	ATPase, Na <sup>+</sup> K <sup>+</sup> transporting, alpha 1 polypeptide
Fyn	U35365	Fyn proto-oncogene
Pkia	L02615	protein kinase inhibitor, alpha
		Rattus norvegicus galactosyltransferase associated kinase (GTA) mRNA,
GTA	L24388	complete cds
Egr1	M18416; J04154	Early growth response 1
		Glutathione-S-transferase, placental
Gstp	X02904	enzyme pi type
Neo1	U68726	neogenin
Atp5g1	D13123	ATP synthase, H <sup>+</sup> transporting, mitochondrial F0 complex, subunit c (subunit 9), isoform 1
		36 kDa calcium-dependent phospholipid-binding protein; This sequence comes from Fig. 1; conceptual translation differs that in published reference; calpastatin 1; annexin II=36 kDa calcium-dependent phospholipid-binding protein [rats, RBL-2H3 basophilic leukemia cells, mRNA, 1362 nt].
	S73557	

Fig. 2. Down-regulated genes after serum withdrawal.

Raf1	M15427	Murine leukemia viral (v-raf-1) oncogene homolog 1 (3611-MSV)
Id1	D10862	Inhibitor of DNA binding 1, helix-loop-helix protein (splice variation) alternative splicing: see also D28754; Rat mRNA for cyclin dependent kinase 2-alpha.
	D28753 + D28754	Tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein, zeta polypeptide
Ywhaz	D17615	Solute carrier family 25, member 5 (adenine nucleotid translocator 2, fibroblast isoform (ATP-ADP carrier protein))
Slc25a5	D12771	Dopa decarboxylase (aromatic L-amino acid decarboxylase)
Ddc	M27716	cadherin 22
Cdh22	D83349	Rat thymidine kinase mRNA, 5' end.
Tk1	M22642	Solute carrier family18 (vesicular monoamine) member 1 (chromaffin granule amine transporter)
Slc18a1	M97380	mitogen-activated protein kinase 6
Mapk6	M64301	R.norvegicus mRNA for Cdk-activating kinase
CAK1	X83579	ADP-ribosylation factor 2
Arf2	L12381	mismatch repair protein
Msh2	X93591	CD24 antigen
Cd24	U49062	glutamate-cysteine ligase , modifier subunit
Gclm	L22191	PDZ and LIM domain 1 (elfin)
Pdlim1	U23769	casein kinase II beta subunit
Csnk2b	L15619	Inhibitor of DNA binding 3, dominant negative helix-loop-helix protein
Id3	D10864	Rattus norvegicus Sprague-Dawley lipid-binding protein mRNA, complete cds
Fabp5	U13253	Rat mRNA for cyclin D1, complete cds.
Ccnd1	D14014	Proliferating cell nuclear antigen
Pcna	Y00047	bone morphogenetic protein 2
Bmp2	Z25868	VGF nerve growth factor inducible activity regulated cytoskeletal-associated protein
Vgf	M60525	Fos-like antigen 1
Arc	U19866	
Fosl1	M19651	

Fig. 3. Upregulated genes after NGF withdrawal.

Common	Genbank	Description
<b>Up regulated genes</b>		
RL/IF-1	X63594	R.rattus RL/IF-1 mRNA.
Arrb2	M91590	Arrestin, beta 2
Vegf	M32167	vascular endothelial growth factor
Rab3a	X06889	Ras-related small GTP binding protein 3A
Adcy6	L01115	Adenylyl cyclase 6
Limk2	D31874	LIM motif-containing protein kinase 2
A2 adenosine receptor	S47609	This sequence comes from Fig. 1b; A2 adenosine receptor [rats, striatum, mRNA, 2141 nt].
Adrbk2	M87855	Adrenergic receptor kinase, beta 2 (G-protein-linked receptor kinase)
Arrb1	M91589	Arrestin, beta 1
Edg5	U10699	endothelial differentiation, sphingolipid G-protein-coupled receptor, 5
Nr4a1	U17254	immediate early gene transcription factor NGFI-B
Kcnj12	X78461	potassium inwardly-rectifying channel, subfamily J, member 12
Camk2d; CAMK1; Camki; RATCAMKI	L13408	Rattus norvegicus calcium/calmodulin-dependent protein kinase II delta subunit mRNA, partial cds.
Il18	U77776	interleukin 18
Mxi1	AF003008	Max interacting protein 1
Ptgfrn	U26595	prostaglandin F2 receptor negative regulator
LOC60660	D38260	BRbeta B-regulatory subunit of protein phosphatase 2A
Ptpns1	D85183	Protein tyrosine phosphatase, non-receptor type substrate 1 (SHP substrate 1)
Vp165	U32990 L33869;	Rattus norvegicus insulin-regulated membrane aminopeptidase IRAP mRNA, complete cds
Cp	J05424	Ceruloplasmin (ferroxidase)
Cdk5	L02121	cyclin-dependent kinase 5
Adrbk1	M87854	adrenergic receptor kinase, beta 1
Madh1	U66478 L24907+ L26288	MAD (mothers against decapentaplegic, Drosophila) homolog 1 CamK I; calcium/calmodulin-dependent protein kinase type I + CaM-like protein kinase
Cacna1a	M64373	Calcium channel alpha 1A
Pfkm	U25651	phosphofructokinase, muscle
Rpa2	X98490	p32-subunit of replication protein A

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JAK1	AJ000556	Rattus norvegicus mRNA for Janus protein tyrosine kinase 1, JAK1.
RBP-6	M69055	Rat insulin-like growth factor binding protein (rIGFBP-6) mRNA, complete cds.
Ddr1	L26525	Discoidin domain receptor (neurotrophic tyrosine kinase, receptor, type 4 (cell adhesion kinase))
Igf1r	L29232	Insulin-like growth factor 1 receptor
Tp53	X13058	Tumor protein p53 (Li-Fraumeni syndrome)
Pla2g6	U51898	phospholipase A2, group VI
Slc2a5	D13871	solute carrier family 2 (facilitated glucose transporter), member 5
Id2	D10863	Inhibitor of DNA binding 2, dominant negative helix-loop-helix protein
Psme1	D45249	Rat mRNA for proteasome activator rPA28 subunit alpha, complete cds.
Ptpa	L01702	Protein tyrosine phosphatase, receptor type, A
Rnpep	U61696	aminopeptidase B
Ccnd1	D14014	Rat mRNA for cyclin D1, complete cds.
Stx5a	L20822	syntaxin 5a
Npr1	M74535	Natriuretic peptide receptor A/Guanylate cyclase A
Tr4	L27513	TR4 orphan receptor
Galr2	U94322	galanin receptor 2
Csnk2a1	L15618	casein kinase II, alpha 1 polypeptide
Ceacam1	M92848	carcinoembryonic antigen-related cell adhesion molecule
Ptprr	D64050	protein tyrosine phosphatase, receptor type, R
Nf1	D45201	Neurofibromatosis type 1
Mgst1	J03752	Rat glutathione S-transferase mRNA, complete cds
Cacna1d	M92905	calcium channel, voltage-dependent, L type, alpha 1D subunit
Chrna3	L31621	Acetylcholine receptor alpha 3 (neuronal nicotine)
Mapk3	M61177	mitogen activated protein kinase 3
Msh2	X93591	mismatch repair protein
Timp2	L31884	tissue inhibitor of metalloproteinase 2
Slc4a2	J05166	Solute carrier family 4, member 2, anion exchange protein 2
	X55986	Rat mRNA for multicatalytic proteinase (MCP) subunit L ingensin, Atp-dependent proteinase, proteasome, macropain).
Jak2	U13396	Janus kinase 2 (a protein tyrosine kinase) kinase domain is 450..1295; Rattus rattus mRNA for PCTAIRE3, complete cds.
	AB005541	

Fig. 3. Upregulated genes after NGF withdrawal.

Na <sup>+</sup> /Cl(-)-dependent neurotransmitter transporter	S68944	This sequence comes from Fig. 1; Na <sup>+</sup> /Cl(-)-dependent neurotransmitter transporter [rats, brain, mRNA, 3762 nt].
Set beta isoform; leukemogenesis protein; This sequence comes from Fig. 1 IIB; set=Set beta isoform {alternatively spliced}	S68987; S68989	[rats, neonatal kidney, mRNA, 2026 nt].
Syn2	M27925	synapsin II
Calm3	X13817	Calmodulin III
class alpha glutathione transferase subunit 8,		
class alpha glutathione transferase 8:		
8, GST 8-8, GST K	X62660; S37370	subunit 8; R.rattus mRNA for glutathione transferase subunit 8.
NSE	AF019973	Rattus norvegicus neuron-specific enolase (NSE) mRNA, complete cds
Stx3a	L20820	syntaxin 3
		Tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein, eta
Ywhah	D17445	polypeptide
Cpt1a	L07736	Carnitine palmitoyltransferase 1 alpha, liver isoform
Sod1	Y00404	Superoxide dismutase 1, soluble
Plcb3	M99567	phospholipase C, beta 3
Ace	U03734	Angiotensin I-converting enzyme (Dipeptidyl carboxypeptidase 1)
Unc5h2	X06769	c-fos protein (AA 1-380); Rat c-fos mRNA.
Rab14	U87306	transmembrane receptor Unc5H2
	M83680	GTPase Rab14
Abcc1	X96394	ATP-binding cassette, sub-family C (CFTR/MRP), member 1 (multiple drug resistance-associated protein)
Id1	D10862	Inhibitor of DNA binding 1, helix-loop-helix protein (splice variation)
Dpp6	M76426	dipeptidylpeptidase 6

Fig. 4. Down-regulated genes after NGF withdrawal.

Down regulated genes		
Ccng1	X70871	Cyclin G1
Slc6a6	M96601	taurine/beta-alanine transporter
Vamp2	M24105	Vesicle-associated membrane protein (synaptobrevin 2)
Jup	U58858	unction plakoglobin
Id3	D10864	Inhibitor of DNA binding 3, dominant negative helix-loop-helix protein
Hsp27	M86389	Heat shock 27 kDa protein Solute carrier family18 (vesicular monoamine) member 1 (chromaffin
Slc18a1	M97380	granule amine transporter)
Mapk6	M64301	mitogen-activated protein kinase 6
Il6st	M92340	Interleukin 6 signal transducer
Syp	X06655	Synaptophysin
Lxn	U40260	Iatexin
Ngfr	X05137	Nerve growth factor receptor, fast
		36 kDa calcium-dependent phospholipid-binding protein; This sequence comes from Fig. 1; conceptual translation differs that in published reference; calpactin 1; annexin II=36 kDa calcium-dependent phospholipid-binding protein [rats, RBL-2H3 basophilic leukemia cells, mRNA, 1362 nt].
	S73557	transcription factor AP-1 (AA 1-334); Rat c-jun oncogene mRNA for transcription factor AP-1.
Jun	X17163	
Btg1	L26268	B-cell translocation gene 1, anti-proliferative
	V01252;	
Cga	J00757	glycoprotein hormones, alpha subunit
Apc	D38629	Adenomatosis polyposis coli
jun-D	D26307	Rattus norvegicus jun-D gene, complete cds
	Z27118	R.rattus mRNA for heat shock protein 70.
Slc30a1	U17133	solute carrier family 30 (zinc transporter), member 1
Ctsl	Y00697	Cathepsin L
Eif5	L11651	eukaryotic initiation factor 5 (eIF-5)
Hmgcs1	X52625	3-hydroxy-3-methylglutaryl-Coenzyme A synthase 1
Csrp3	X81193	cysteine-rich protein 3
Slc7a1	U70476;	Solute carrier family 7 member A1 (amino acid transporter cationic 1)
Cyp51	U17697	Cytochrome P450 Lanosterol 14 alpha-demethylase
Bin1	Y13380	myc box dependent interacting protein 1
Plec1	X59601	plectin
Atp2b1	J03753	ATPase, Ca++ transporting, plasma membrane 1

Fig. 4. Down-regulated genes after NGF withdrawal.

		Rattus norvegicus Sprague-Dawley lipid-binding protein mRNA, complete
Fabp5	U13253	cds
Cdkn1a	L41275	cyclin-dependent kinase inhibitor 1A (P21)
	M21730	
Anx5	J03898;	Annexin V
Bmp2	Z25868	bone morphogenetic protein 2
Pfkfb4	M64797	6-phosphofructo-2-kinase/fructose-2,6-biphosphatase 4
Tnfr1	M63122	Tumor necrosis factor receptor superfamily, member 1a
Vil2	X67788	ezrin
Pim1	X63675	Pim-1 oncogene
Fosl2	U18913	Fos like antigen 2
Btg2	M60921	B-cell translocation gene 2, anti-proliferative
Rin1	U80076	Rattus norvegicus RIN1 mRNA, complete cds
Slc2a1	M13979	Rat brain glucose-transporter protein mRNA, complete cds
Junb	X54686	jun B proto-oncogene
Vgf	M60525	VGF nerve growth factor inducible
Il2rb	M55050	Interleukin 2 receptor, beta chain
Egr1	M18416;	Early growth response 1
	X13722	Rat mRNA for LDL-receptor
		Rat mRNA for 53 kD polypeptide induced by growth factors (EGF) and
Mmp3	X02601	oncogenes (H-ras; src; polyoma middle T)
	AF00778	
uPAR-2	9 +	urinary plasminogen activator receptor 2
34A	M65253	Rat transformation-associated protein (34A) mRNA, complete cds
Serpine1	M24067	serine (or cysteine) proteinase inhibitor, clade E (nexin, plasminogen activator inhibitor type 1), member 1
Fosl1	M19651	Fos-like antigen 1
Arc	U19866	activity regulated cytoskeletal-associated protein